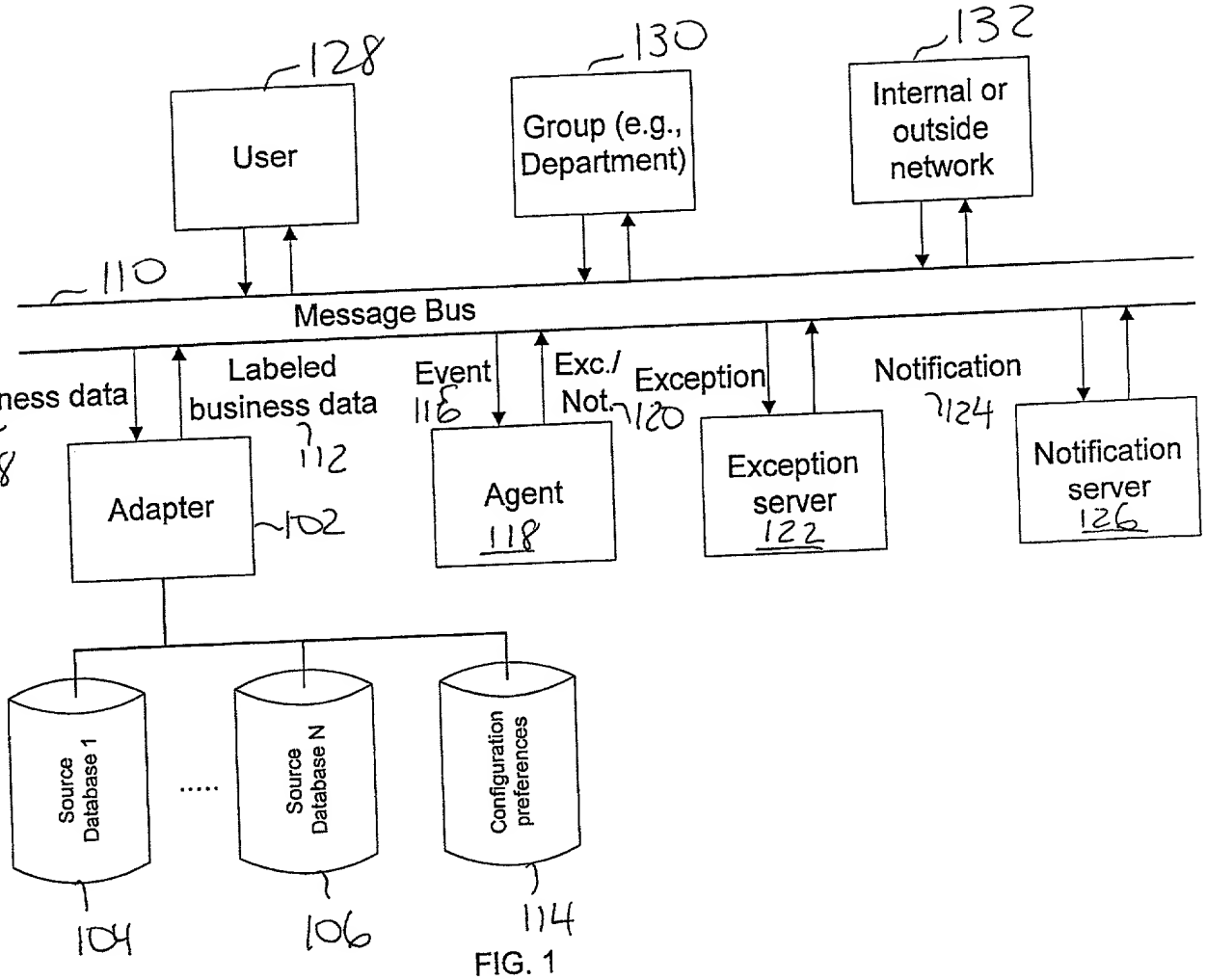
128
130
132
User
Group (e.g., Department)
Internal or outside network
110
Message Bus
Business data
108
Labeled business data
112
Event
116
Exc./ Not.
120
Exception
Notification
124
Adapter
102
Agent
118
Exception server
122
Notification server
126
Source Database 1
.....
Source Database N
Configuration preferences
104
106
114

FIG. 1

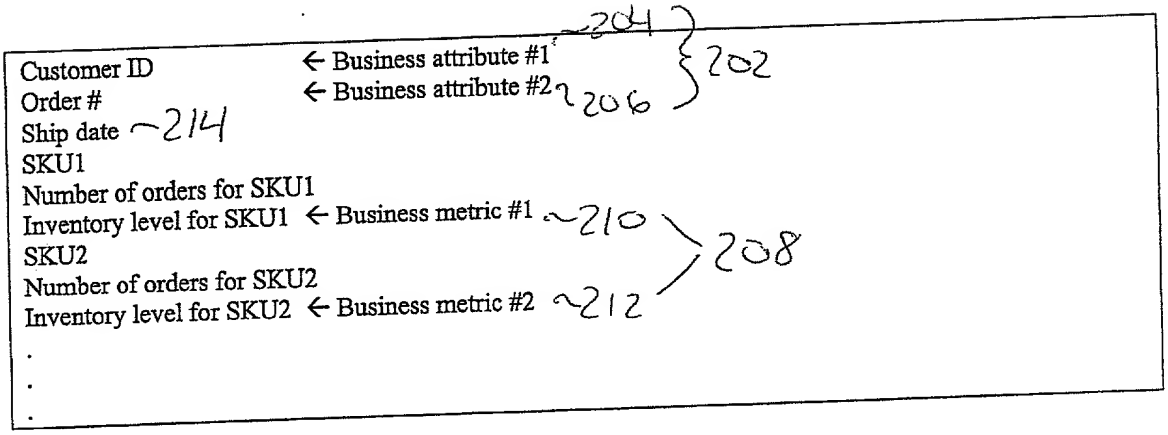
Customer ID ← Business attribute #1
Order # ← Business attribute #2
Ship date
SKU1
Number of orders for SKU1
Inventory level for SKU1 ← Business metric #1
SKU2
Number of orders for SKU2
Inventory level for SKU2 ← Business metric #2
.
.
.
204
206
202
214
210
212
208

FIG. 2

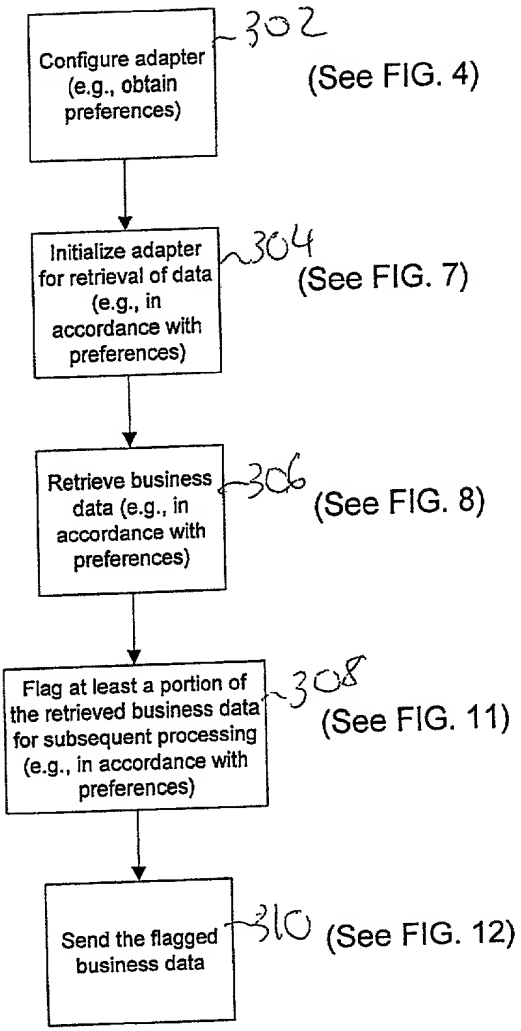
Configure adapter (e.g., obtain preferences)
302
(See FIG. 4)
Initialize adapter for retrieval of data (e.g., in accordance with preferences)
304
(See FIG. 7)
Retrieve business data (e.g., in accordance with preferences)
306
(See FIG. 8)
Flag at least a portion of the retrieved business data for subsequent processing (e.g., in accordance with preferences)
308
(See FIG. 11)
Send the flagged business data
310
(See FIG. 12)

FIG. 3

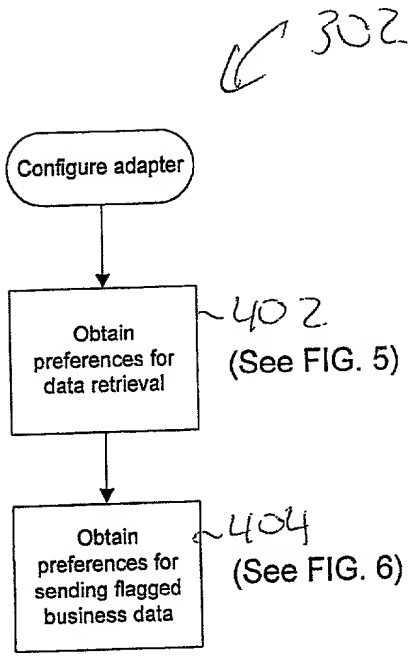
302
Configure adapter
Obtain preferences for data retrieval
402
(See FIG. 5)
Obtain preferences for sending flagged business data
404
(See FIG. 6)

FIG. 4

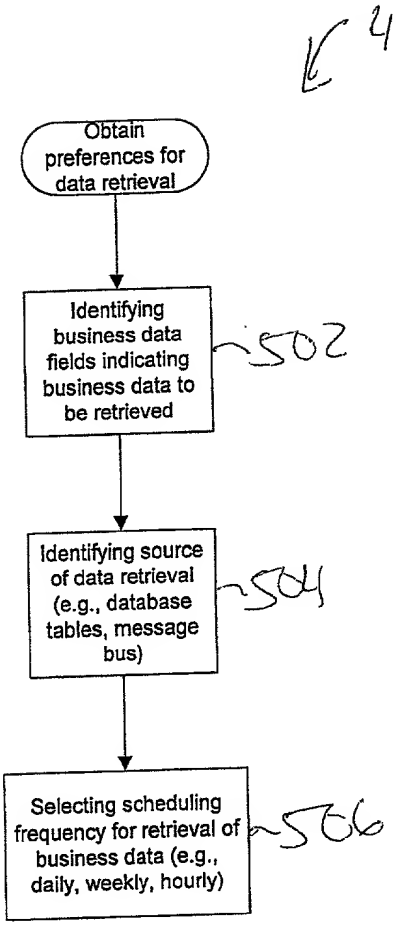
402
Obtain preferences for data retrieval
Identifying business data fields indicating business data to be retrieved
502
Identifying source of data retrieval (e.g., database tables, message bus)
504
Selecting scheduling frequency for retrieval of business data (e.g., daily, weekly, hourly)
506

FIG. 5

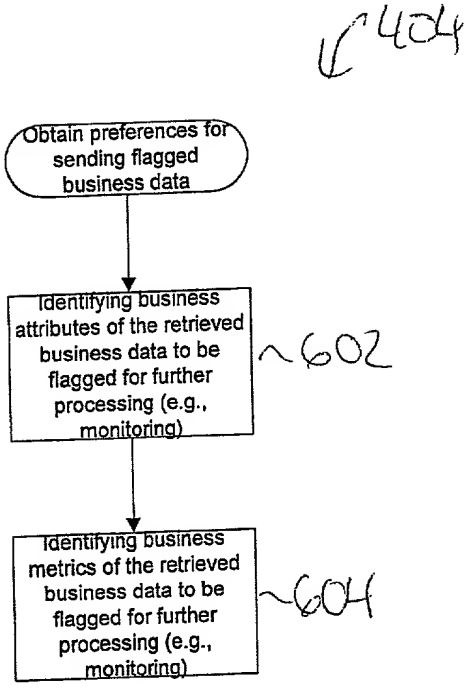
404
Obtain preferences for sending flagged business data
Identifying business attributes of the retrieved business data to be flagged for further processing (e.g., monitoring)
602
Identifying business metrics of the retrieved business data to be flagged for further processing (e.g., monitoring)
604

FIG. 6

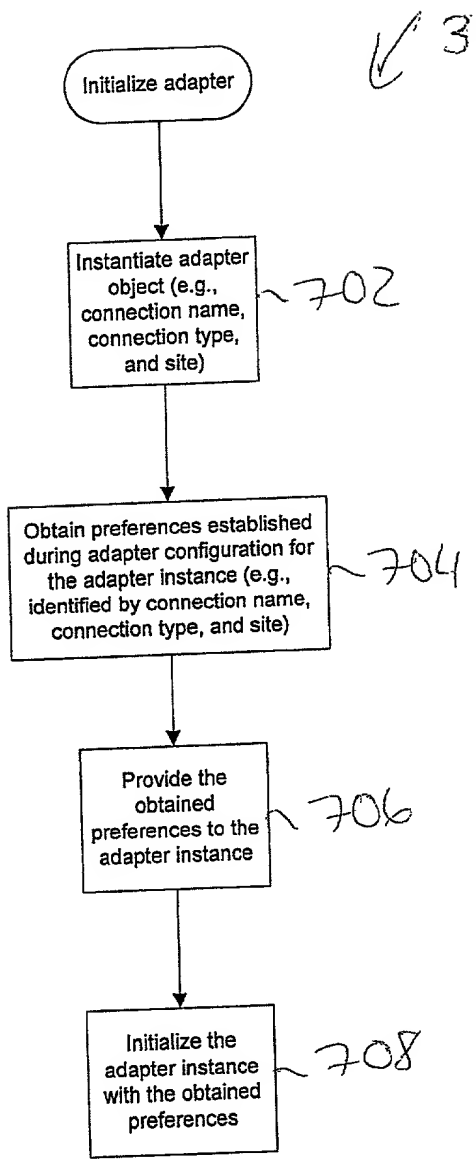
304
Initialize adapter
Instantiate adapter object (e.g., connection name, connection type, and site)
702
Obtain preferences established during adapter configuration for the adapter instance (e.g., identified by connection name, connection type, and site)
704
Provide the obtained preferences to the adapter instance
706
Initialize the adapter instance with the obtained preferences
708

FIG. 7

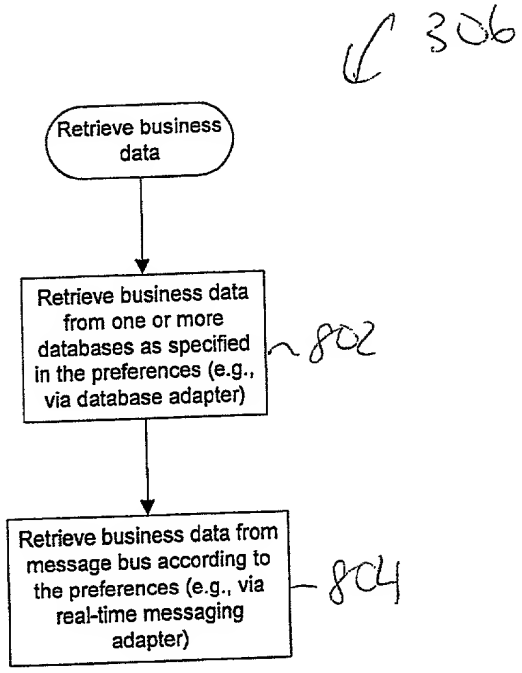
306
Retrieve business data
Retrieve business data from one or more databases as specified in the preferences (e.g., via database adapter)
802
Retrieve business data from message bus according to the preferences (e.g., via real-time messaging adapter)
804

FIG. 8

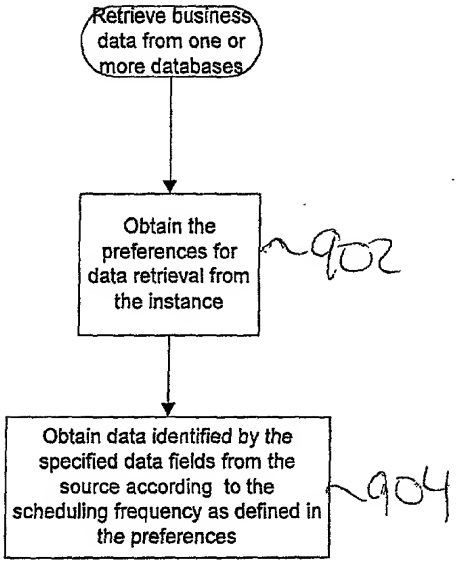
Retrieve business data from one or more databases
Obtain the preferences for data retrieval from the instance
902
Obtain data identified by the specified data fields from the source according to the scheduling frequency as defined in the preferences
904

FIG. 9

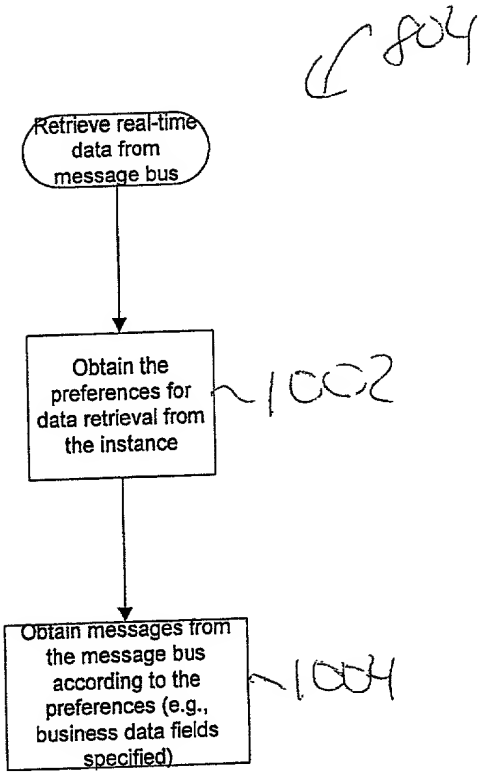
804
Retrieve real-time data from message bus
Obtain the preferences for data retrieval from the instance
1002
Obtain messages from the message bus according to the preferences (e.g., business data fields specified)
1004

FIG. 10

Attribute name	Data type	Attribute value	Attribute #	Metric value flag
Customer	String	"SHOES INC"	1	
Order No.	Integer	42859	2	
Ship date	String	"01/04/01"		
SKU1	Integer	000195		
Number of orders – SKU1	Integer	4		
Inventory level for SKU1	Integer	97		1
SKU2	Integer	000228		
Number of orders – SKU2	Integer	16		
Inventory level for SKU2	Integer	31		2

FIG. 11

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Message

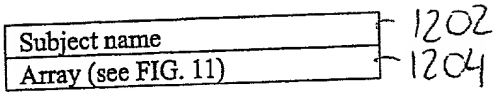


FIG. 12

Client's Docket No. 2003-0566.00/US
Patent Application

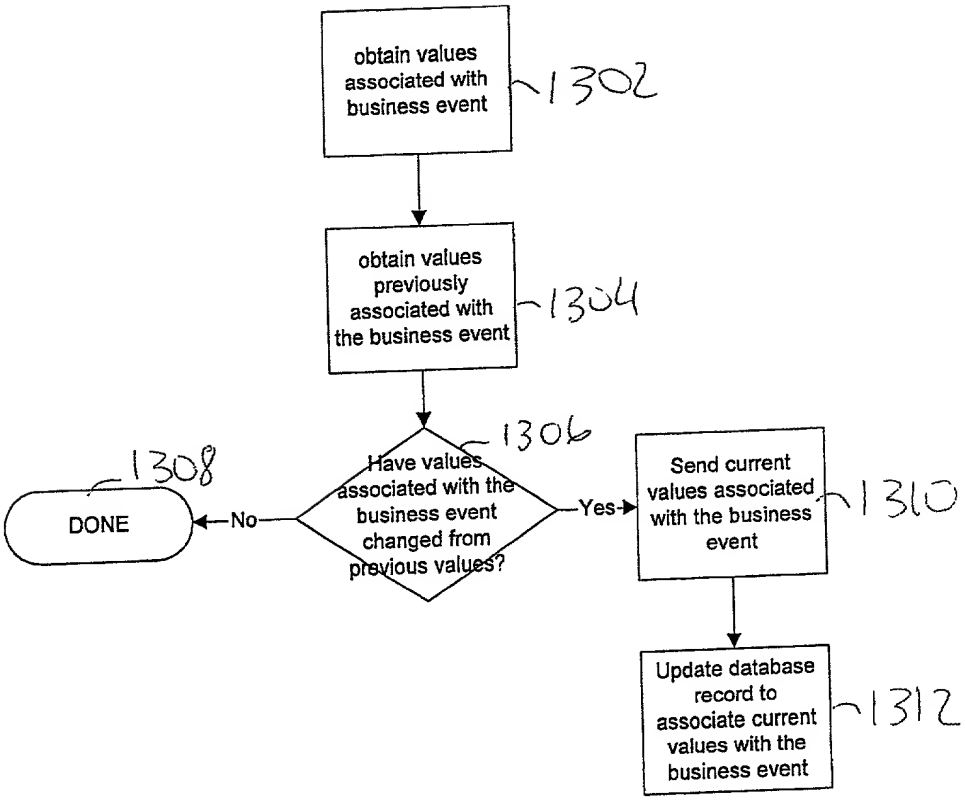

obtain values associated with business event
1302
obtain values previously associated with the business event
1304
Have values associated with the business event changed from previous values?
1306
No
DONE
1308
Yes
Send current values associated with the business event
1310
Update database record to associate current values with the business event
1312

FIG. 13

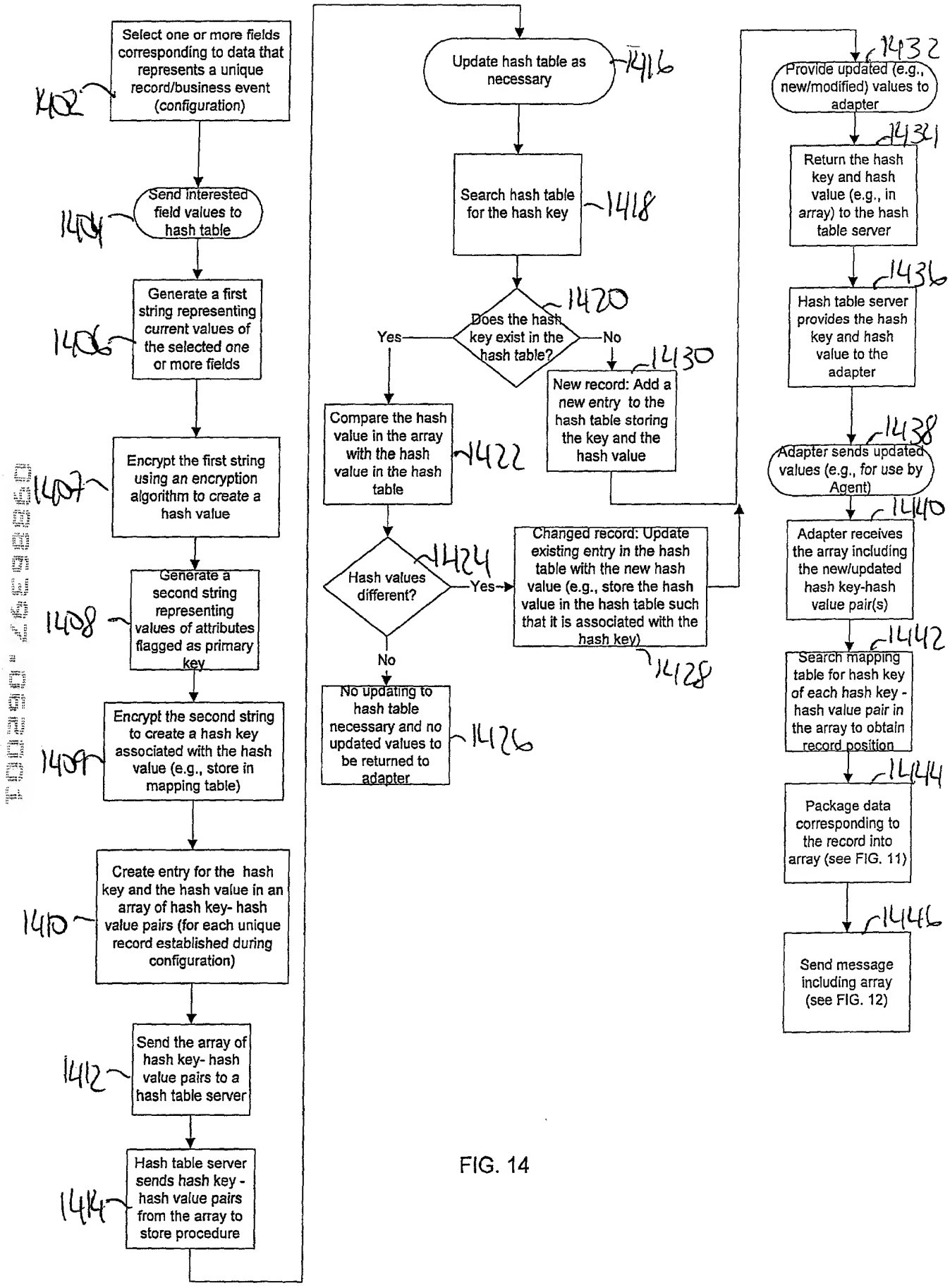

1402
Select one or more fields corresponding to data that represents a unique record/business event (configuration)
1404
Send interested field values to hash table
1406
Generate a first string representing current values of the selected one or more fields
1407
Encrypt the first string using an encryption algorithm to create a hash value
1408
Generate a second string representing values of attributes flagged as primary key
1409
Encrypt the second string to create a hash key associated with the hash value (e.g., store in mapping table)
1410
Create entry for the hash key and the hash value in an array of hash key- hash value pairs (for each unique record established during configuration)
1412
Send the array of hash key- hash value pairs to a hash table server
1414
Hash table server sends hash key - hash value pairs from the array to store procedure
1416
Update hash table as necessary
1418
Search hash table for the hash key
1420
Does the hash key exist in the hash table?
Yes
No
1422
Compare the hash value in the array with the hash value in the hash table
1424
Hash values different?
Yes
No
1426
No updating to hash table necessary and no updated values to be returned to adapter
1428
Changed record: Update existing entry in the hash table with the new hash value (e.g., store the hash value in the hash table such that it is associated with the hash key)
1430
New record: Add a new entry to the hash table storing the key and the hash value
1432
Provide updated (e.g., new/modified) values to adapter
1434
Return the hash key and hash value (e.g., in array) to the hash table server
1436
Hash table server provides the hash key and hash value to the adapter
1438
Adapter sends updated values (e.g., for use by Agent)
1440
Adapter receives the array including the new/updated hash key-hash value pair(s)
1442
Search mapping table for hash key of each hash key - hash value pair in the array to obtain record position
1444
Package data corresponding to the record into array (see FIG. 11)
1446
Send message including array (see FIG. 12)

FIG. 14

1502 1504

Hash key	Hash value
Key 1	String 1
Key 2	String 2

FIG. 15

1602 Mapping Table 1604

Hash key	Original record position (e.g., pointer)

FIG. 16

Sheet 14 of 16 - Patent Application Publication

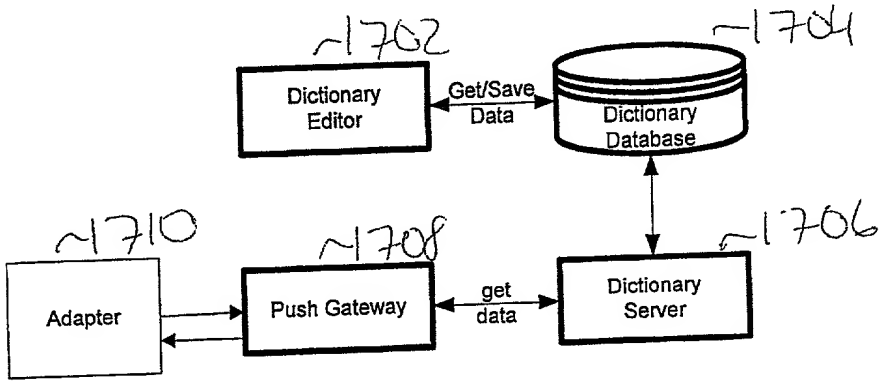

1702
1704
Dictionary Editor
Get/Save Data
Dictionary Database
1710
1708
1706
Adapter
Push Gateway
get data
Dictionary Server

FIG. 17

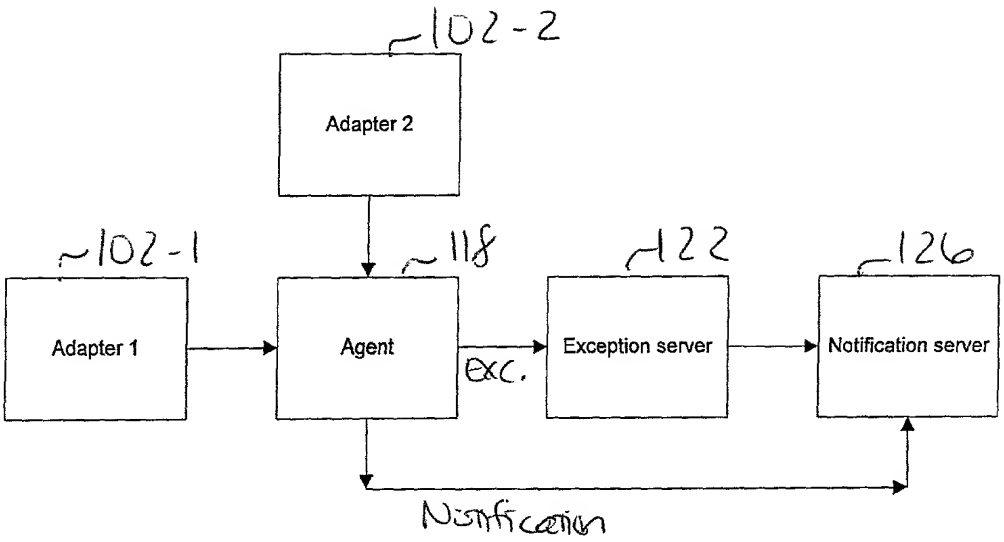

102-2
Adapter 2
102-1
118
122
126
Adapter 1
Agent
exc.
Exception server
Notification server
Notification

FIG. 18

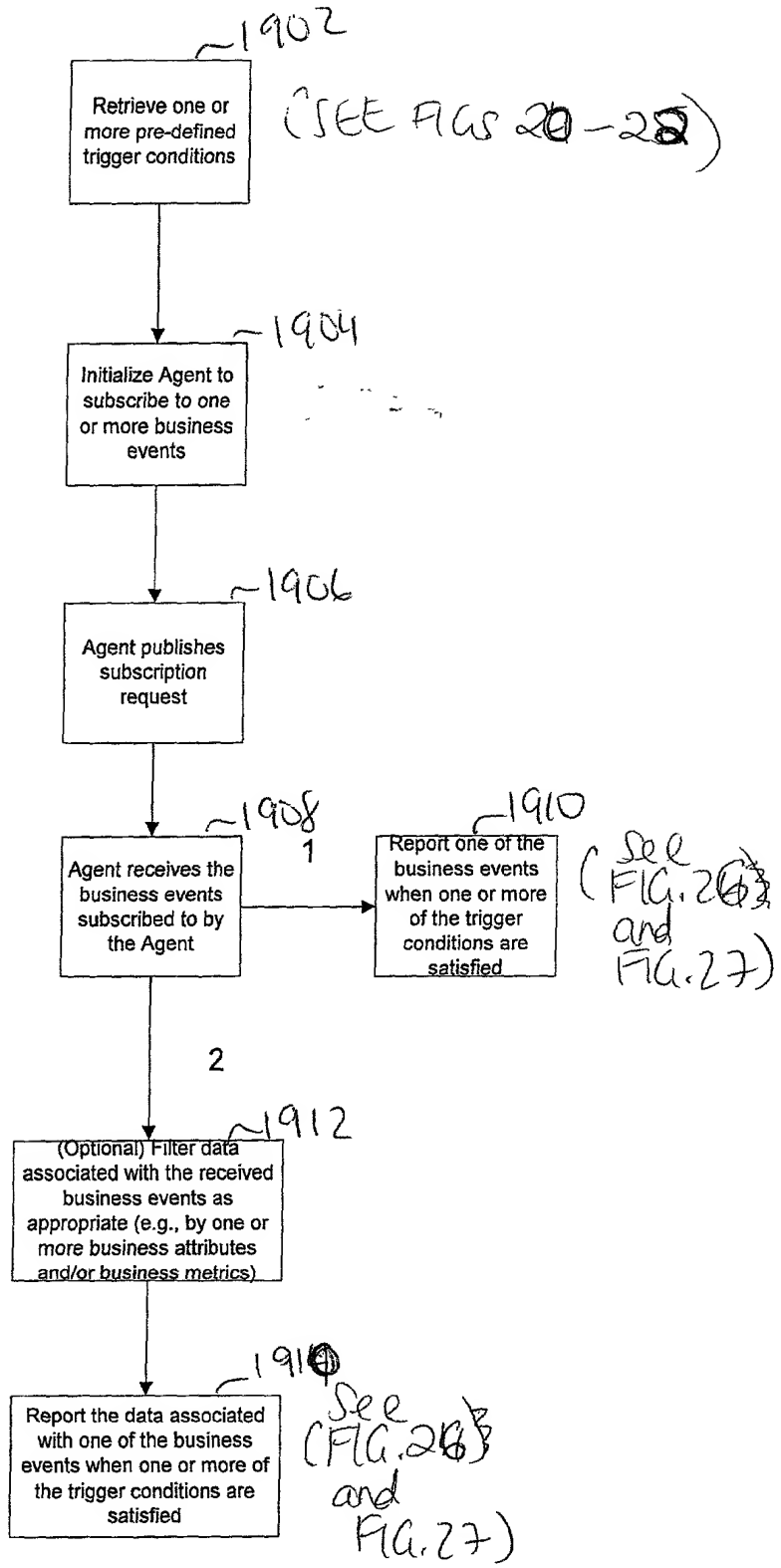

1902
Retrieve one or more pre-defined trigger conditions
(SEE FIGS 20-28)
1904
Initialize Agent to subscribe to one or more business events
1906
Agent publishes subscription request
1908
Agent receives the business events subscribed to by the Agent
1
1910
Report one of the business events when one or more of the trigger conditions are satisfied
(See FIG. 26 and FIG. 27)
2
1912
(Optional) Filter data associated with the received business events as appropriate (e.g., by one or more business attributes and/or business metrics)
1914
Report the data associated with one of the business events when one or more of the trigger conditions are satisfied
See (FIG. 26 and FIG. 27)

FIG. 19

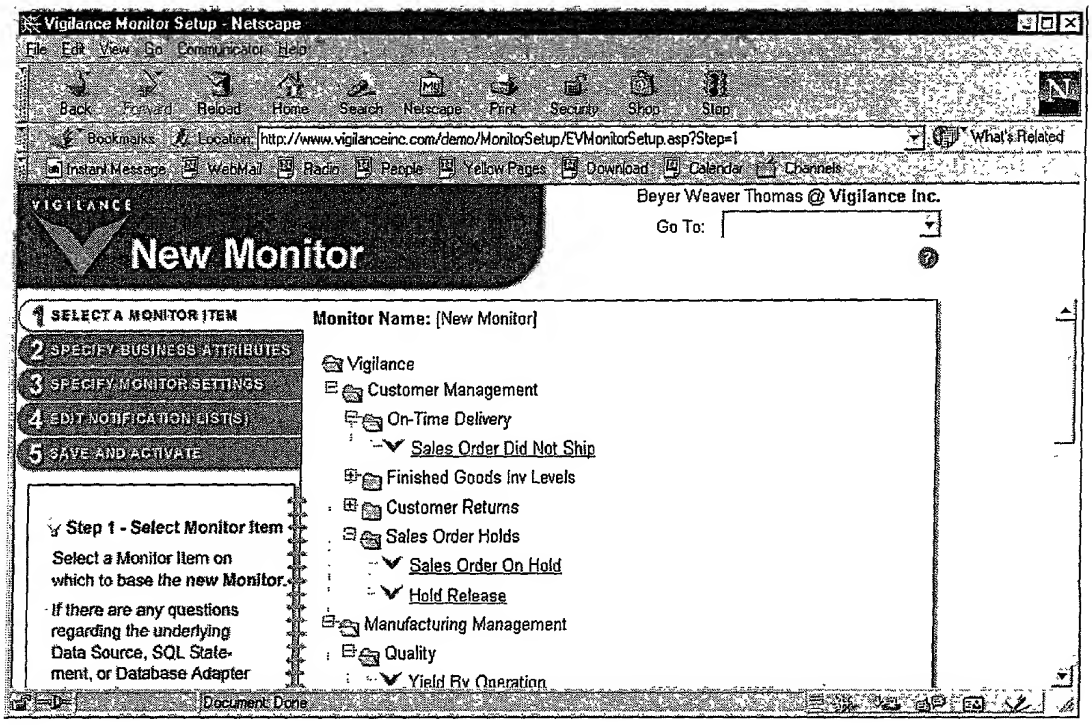

Vigilance Monitor Setup - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?Step=1
What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
1 SELECT A MONITOR ITEM
2 SPECIFY BUSINESS ATTRIBUTES
3 SPECIFY MONITOR SETTINGS
4 EDIT NOTIFICATION LIST(S)
5 SAVE AND ACTIVATE
Step 1 - Select Monitor Item
Select a Monitor Item on which to base the new Monitor.
If there are any questions regarding the underlying Data Source, SQL Statement, or Database Adapter
Monitor Name: [New Monitor]
Vigilance
Customer Management
On-Time Delivery
Sales Order Did Not Ship
Finished Goods Inv Levels
Customer Returns
Sales Order Holds
Sales Order On Hold
Hold Release
Manufacturing Management
Quality
Yield By Operation
Document: Done

FIG. 20

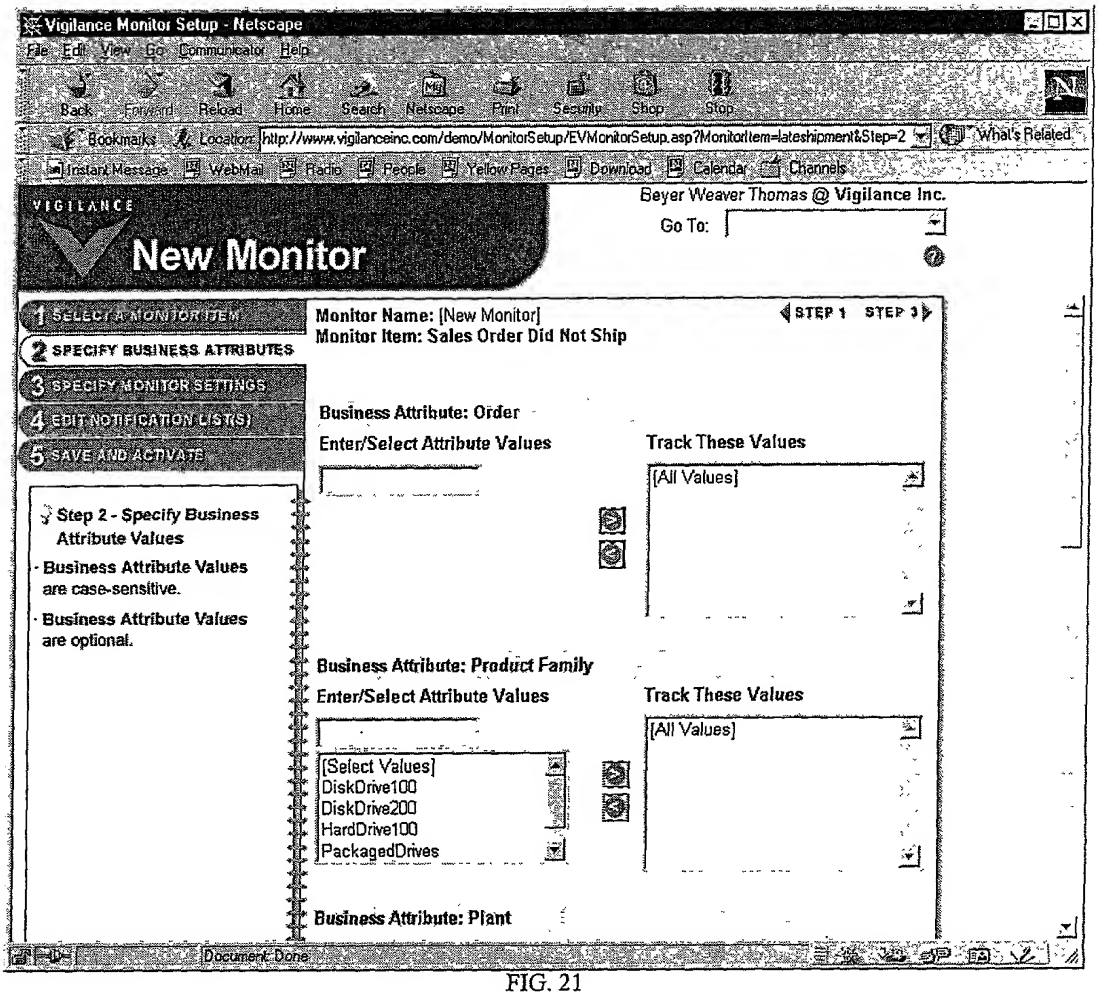

Vigilance Monitor Setup - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?MonitorItem=lateshipment&Step=2 What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
1 SELECT A MONITOR ITEM
2 SPECIFY BUSINESS ATTRIBUTES
3 SPECIFY MONITOR SETTINGS
4 EDIT NOTIFICATION LIST(S)
5 SAVE AND ACTIVATE
Step 2 - Specify Business Attribute Values
· Business Attribute Values are case-sensitive.
· Business Attribute Values are optional.
Monitor Name: [New Monitor]
STEP 1 STEP 3
Monitor Item: Sales Order Did Not Ship
Business Attribute: Order
Enter/Select Attribute Values
Track These Values
[All Values]
Business Attribute: Product Family
Enter/Select Attribute Values
Track These Values
[All Values]
[Select Values]
DiskDrive100
DiskDrive200
HardDrive100
PackagedDrives
Business Attribute: Plant
Document: Done

FIG. 21

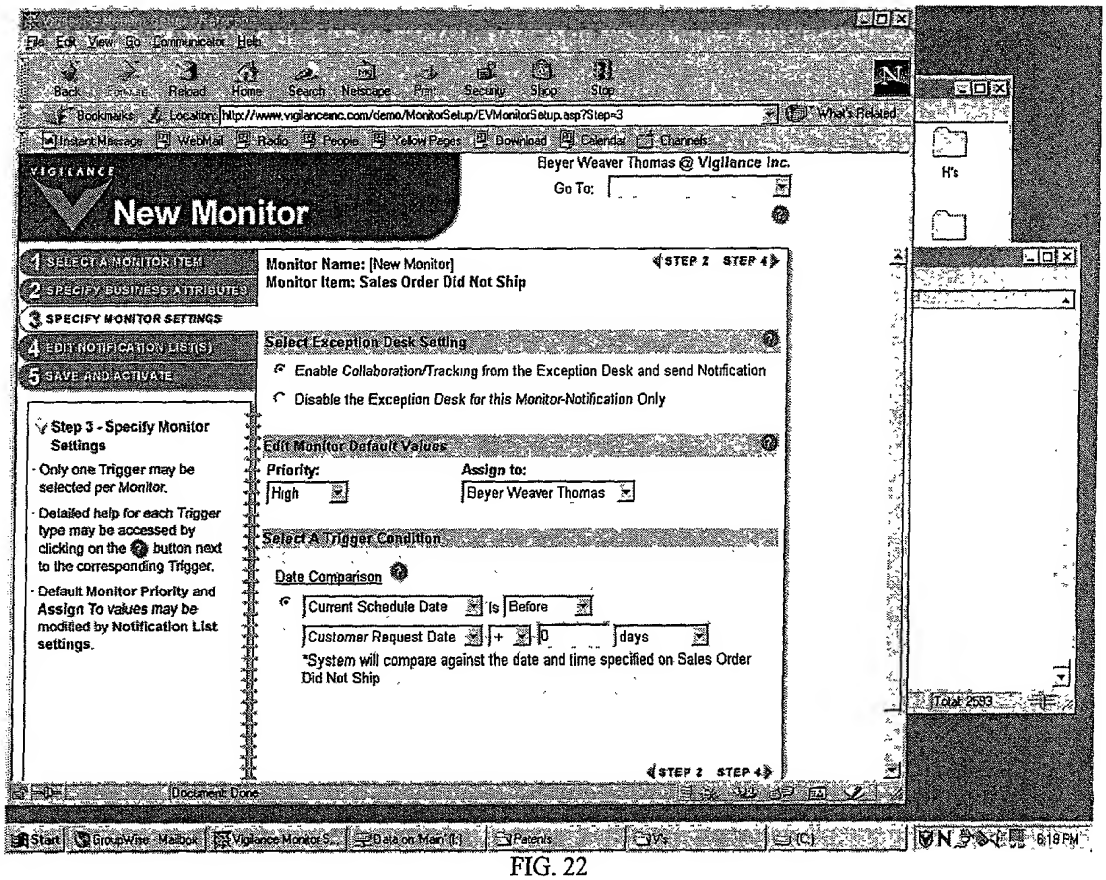

File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Stop
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?Step=3
What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
1 SELECT A MONITOR ITEM
2 SPECIFY BUSINESS ATTRIBUTES
3 SPECIFY MONITOR SETTINGS
4 EDIT NOTIFICATION LIST(S)
5 SAVE AND ACTIVATE
Step 3 - Specify Monitor Settings
- Only one Trigger may be selected per Monitor.
- Detailed help for each Trigger type may be accessed by clicking on the ? button next to the corresponding Trigger.
- Default Monitor Priority and Assign To values may be modified by Notification List settings.
Monitor Name: [New Monitor]
Monitor Item: Sales Order Did Not Ship
STEP 2 STEP 4
Select Exception Desk Setting
Enable Collaboration/Tracking from the Exception Desk and send Notification
Disable the Exception Desk for this Monitor-Notification Only
Edit Monitor Default Values
Priority:
High
Assign to:
Beyer Weaver Thomas
Select A Trigger Condition
Date Comparison
Current Schedule Date is Before
Customer Request Date + 0 days
*System will compare against the date and time specified on Sales Order Did Not Ship
STEP 2 STEP 4
Document Done
Start
GroupWise Mailbox
Vigilance Monitor S...
Data on Main (I:)
Parents
(C:)
8:18 PM
H's
Total 2593

FIG. 22

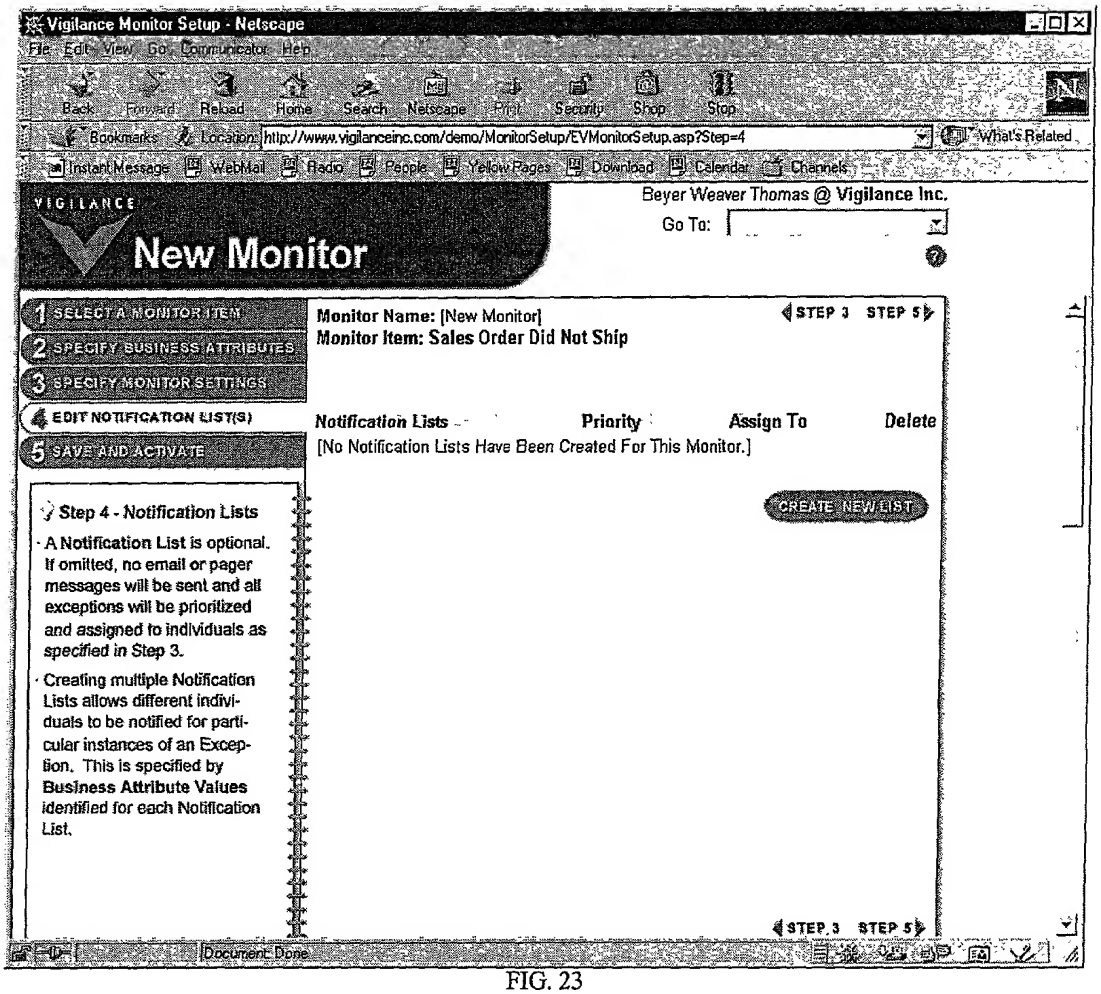

Vigilance Monitor Setup - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?Step=4
What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
1 SELECT A MONITOR ITEM
2 SPECIFY BUSINESS ATTRIBUTES
3 SPECIFY MONITOR SETTINGS
4 EDIT NOTIFICATION LIST(S)
5 SAVE AND ACTIVATE
Monitor Name: [New Monitor]
Monitor Item: Sales Order Did Not Ship
STEP 3 STEP 5
Notification Lists
Priority
Assign To
Delete
[No Notification Lists Have Been Created For This Monitor.]
CREATE NEW LIST
Step 4 - Notification Lists
A Notification List is optional. If omitted, no email or pager messages will be sent and all exceptions will be prioritized and assigned to individuals as specified in Step 3.
Creating multiple Notification Lists allows different individuals to be notified for particular instances of an Exception. This is specified by Business Attribute Values identified for each Notification List.
STEP 3 STEP 5
Document Done

FIG. 23

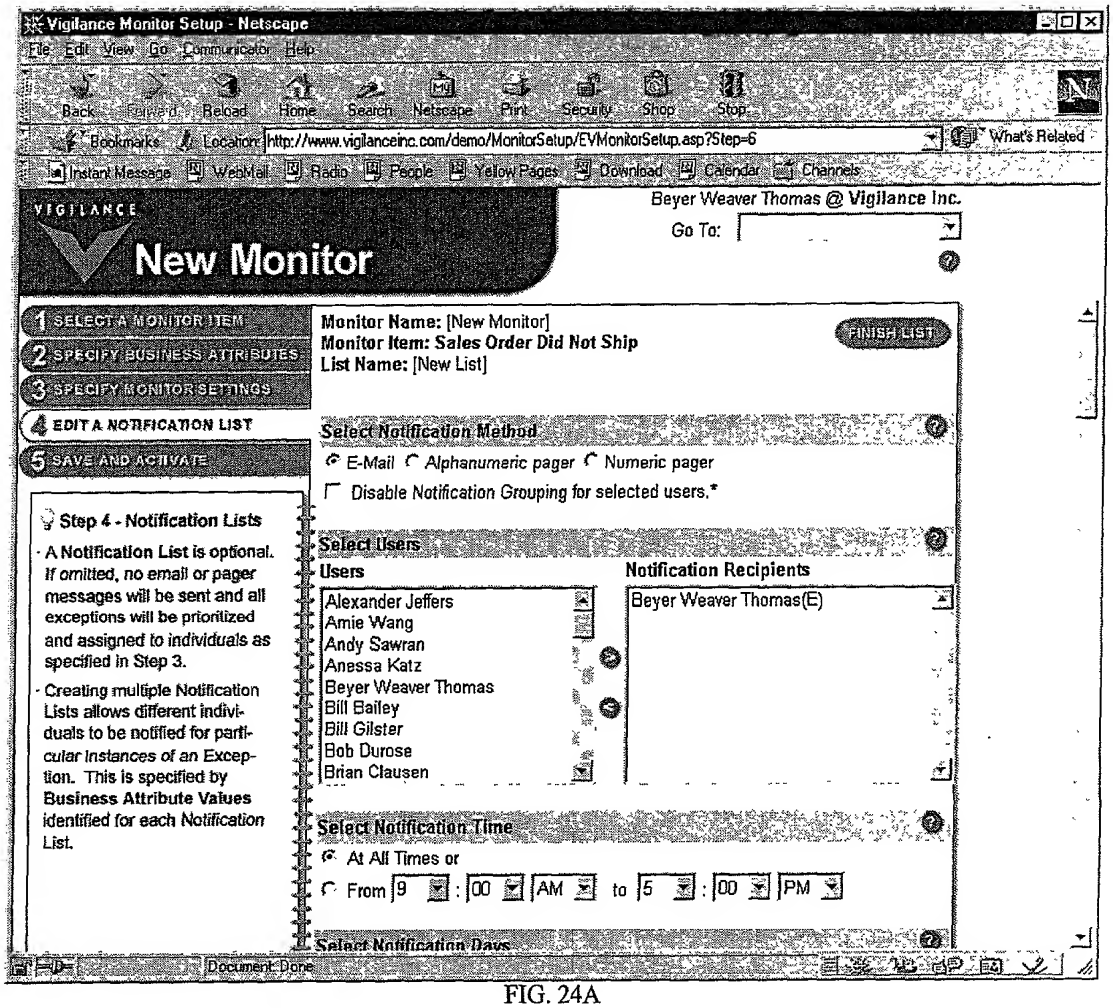

Vigilance Monitor Setup - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?Step=6
What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
1 SELECT A MONITOR ITEM
2 SPECIFY BUSINESS ATTRIBUTES
3 SPECIFY MONITOR SETTINGS
4 EDIT A NOTIFICATION LIST
5 SAVE AND ACTIVATE
Monitor Name: [New Monitor]
Monitor Item: Sales Order Did Not Ship
List Name: [New List]
FINISH LIST
Select Notification Method
E-Mail Alphanumeric pager Numeric pager
Disable Notification Grouping for selected users.*
Step 4 - Notification Lists
A Notification List is optional. If omitted, no email or pager messages will be sent and all exceptions will be prioritized and assigned to individuals as specified in Step 3.
Creating multiple Notification Lists allows different individuals to be notified for particular instances of an Exception. This is specified by Business Attribute Values identified for each Notification List.
Select Users
Users
Alexander Jeffers
Amie Wang
Andy Sawran
Anessa Katz
Beyer Weaver Thomas
Bill Bailey
Bill Gilster
Bob Durose
Brian Clausen
Notification Recipients
Beyer Weaver Thomas(E)
Select Notification Time
At All Times or
From 9 : 00 AM to 5 : 00 PM
Select Notification Days
Document: Done

FIG. 24A

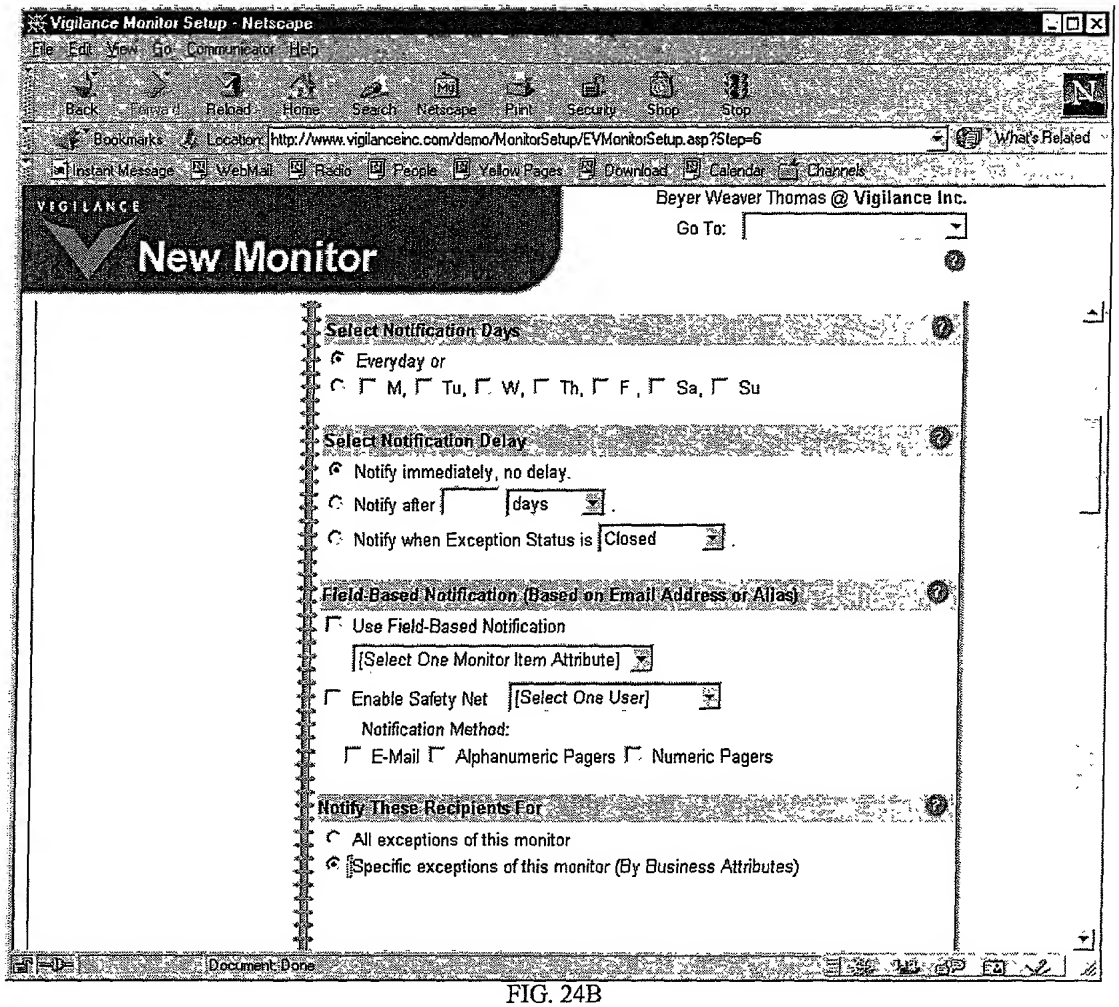


FIG. 24B

Express Mail No. EV339933747US

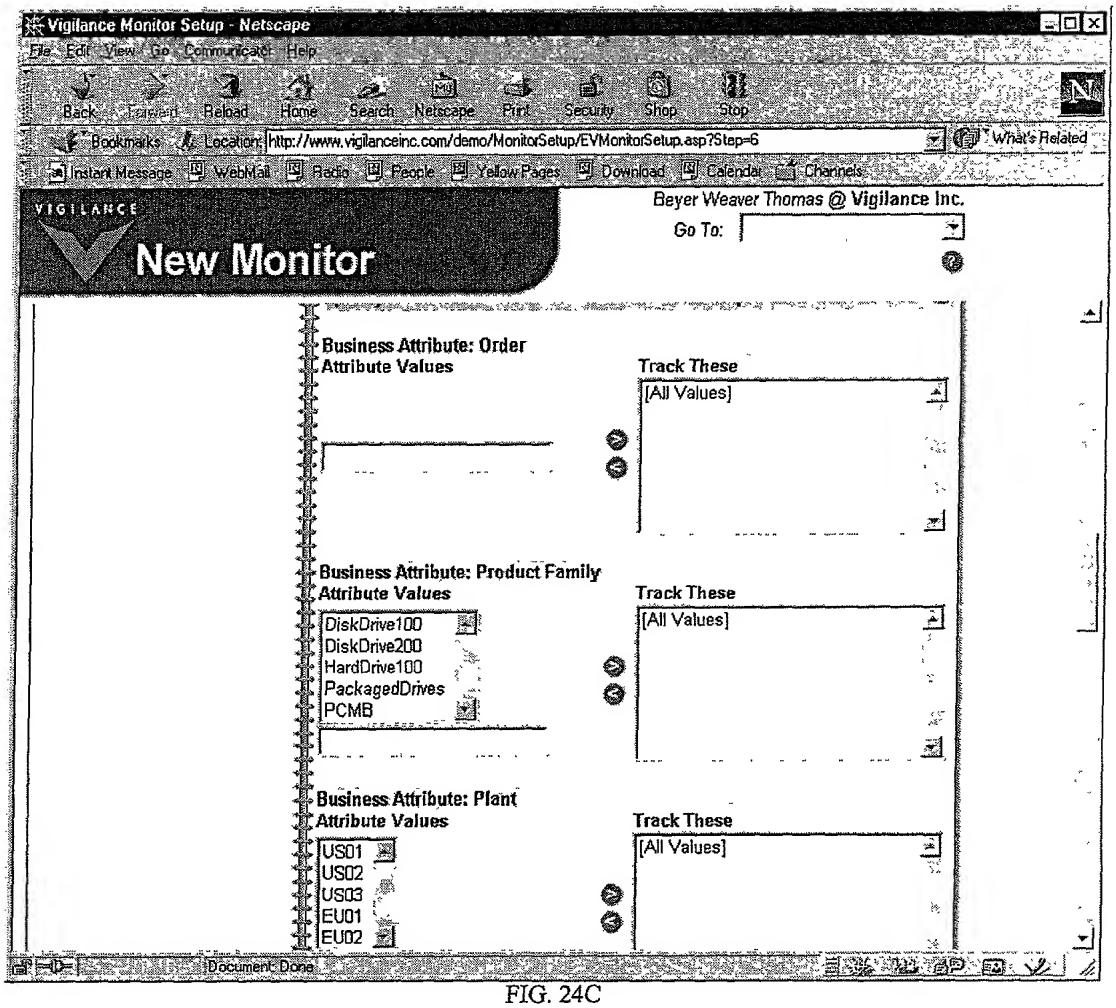

Vigilance Monitor Setup - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?Step=6
What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
Business Attribute: Order
Attribute Values
Track These
[All Values]
Business Attribute: Product Family
Attribute Values
DiskDrive100
DiskDrive200
HardDrive100
PackagedDrives
PCMB
Track These
[All Values]
Business Attribute: Plant
Attribute Values
US01
US02
US03
EU01
EU02
Track These
[All Values]
Document: Done

FIG. 24C

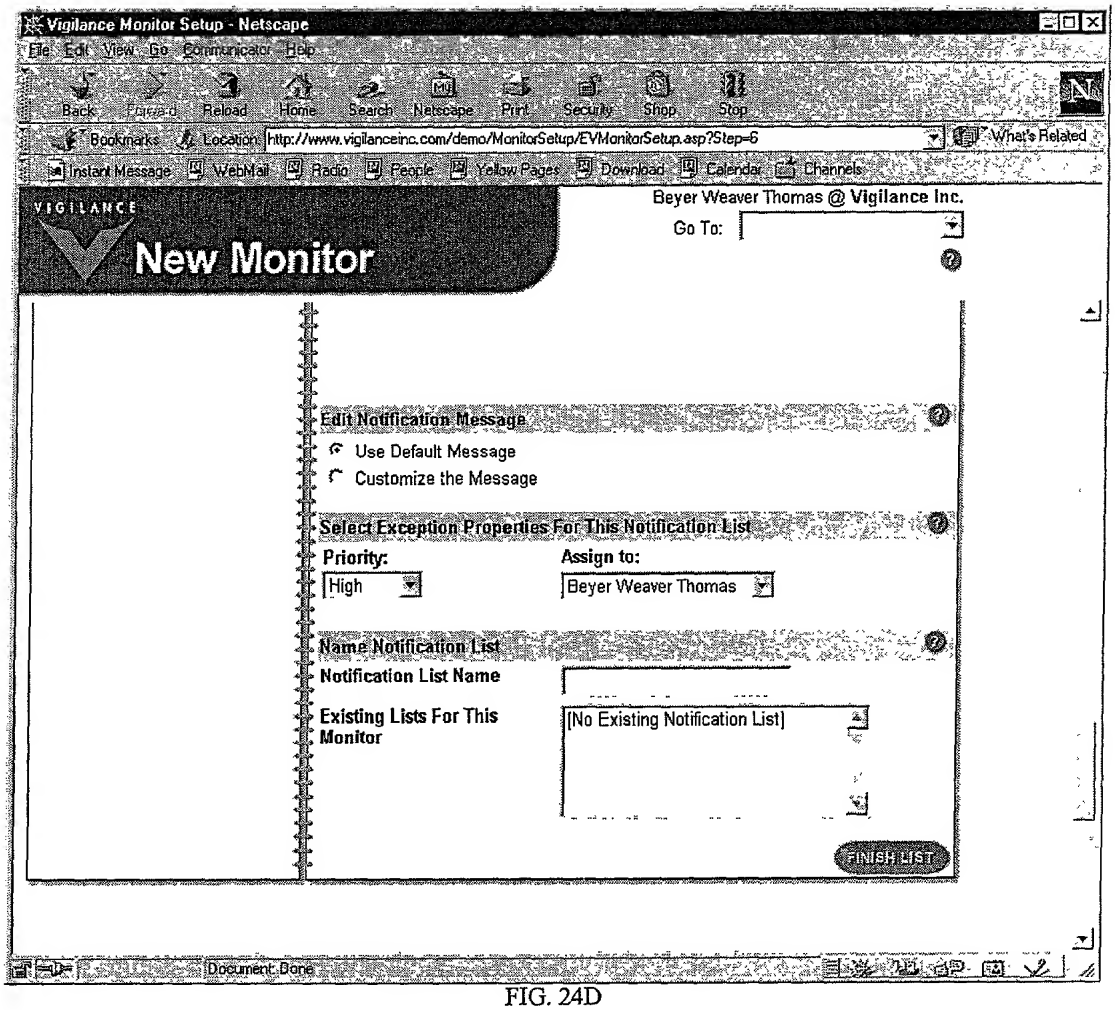

Vigilance Monitor Setup - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?Step=6
What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
Edit Notification Message
Use Default Message
Customize the Message
Select Exception Properties For This Notification List
Priority:
High
Assign to:
Beyer Weaver Thomas
Name Notification List
Notification List Name
Existing Lists For This Monitor
[No Existing Notification List]
FINISH LIST
Document: Done

FIG. 24D

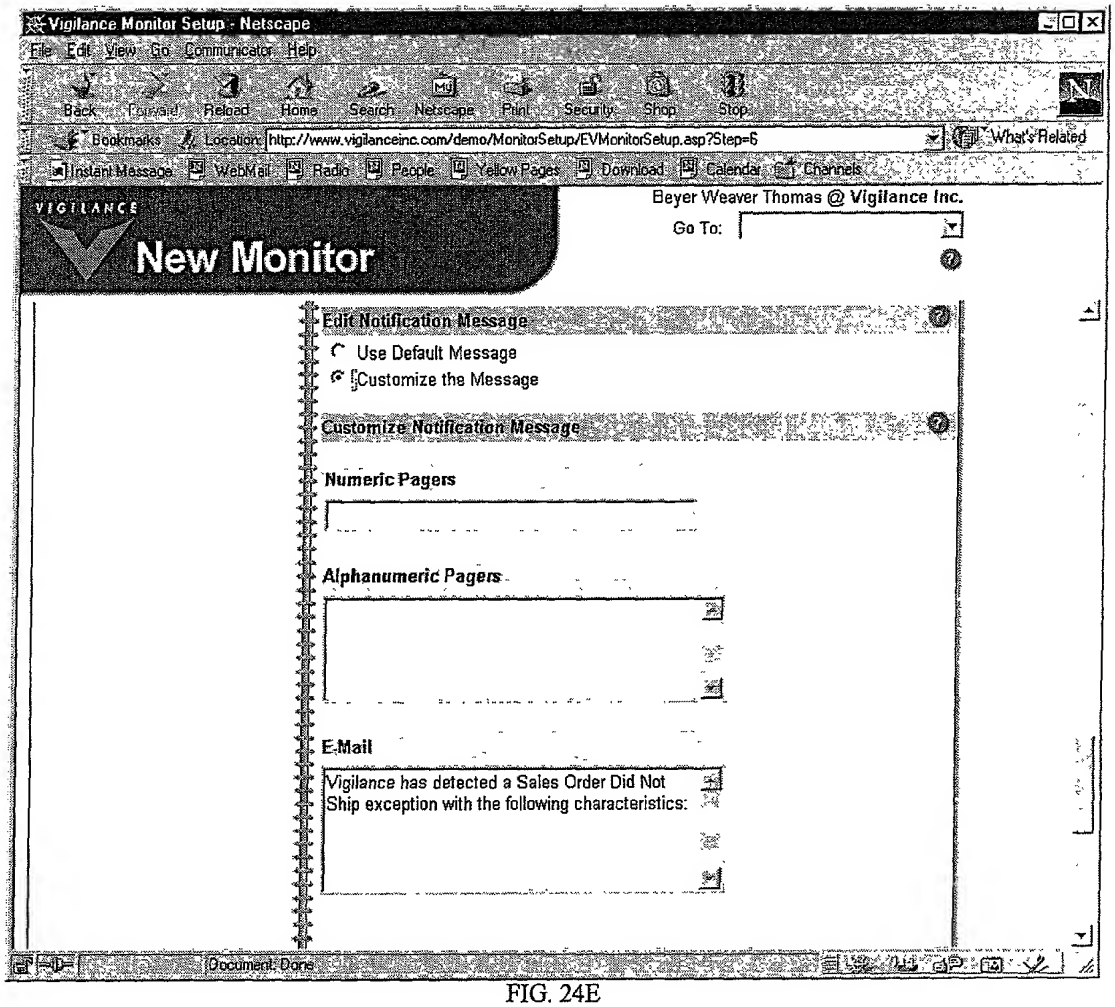

Vigilance Monitor Setup - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?Step=6
What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
Edit Notification Message
Use Default Message
Customize the Message
Customize Notification Message
Numeric Pagers
Alphanumeric Pagers
E-Mail
Vigilance has detected a Sales Order Did Not Ship exception with the following characteristics:
Document: Done

FIG. 24E

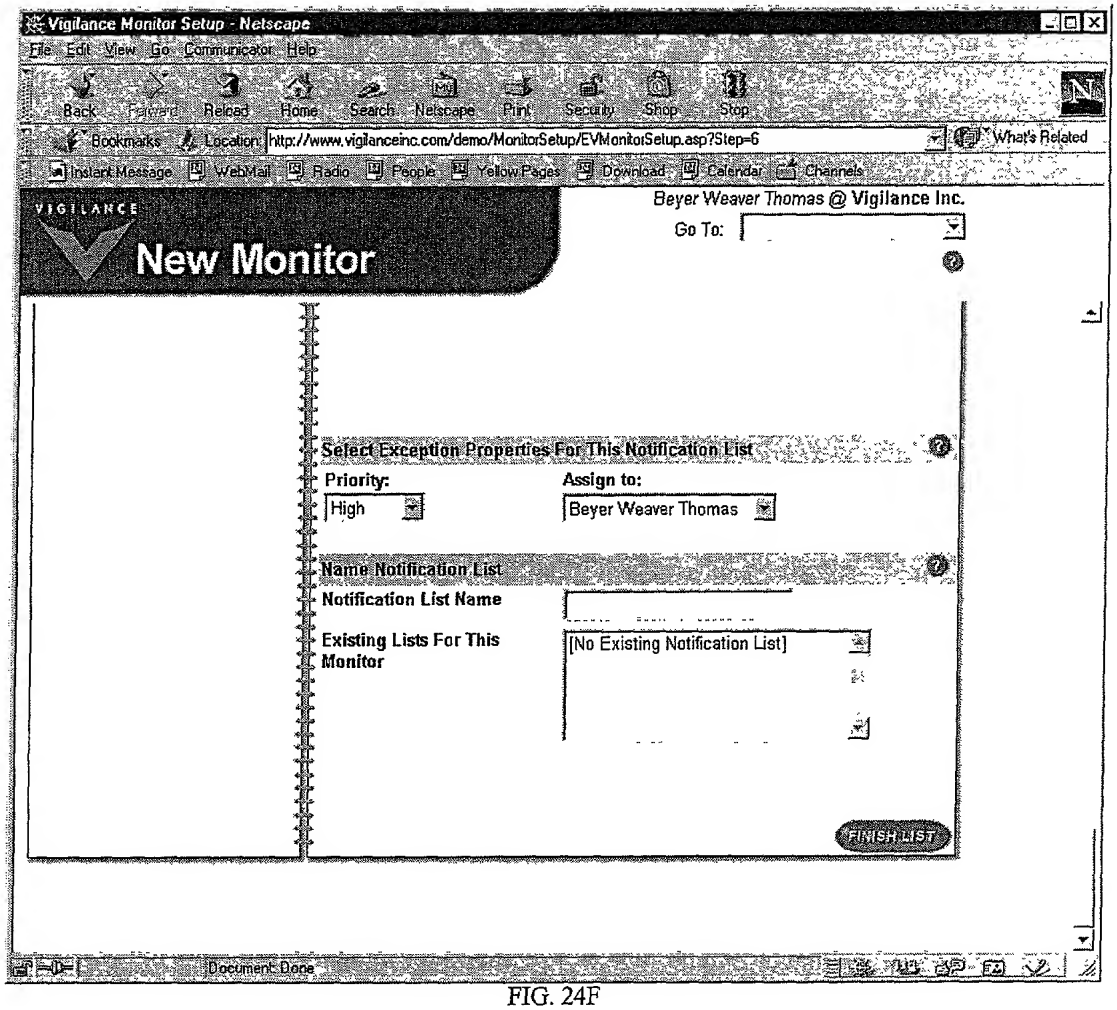
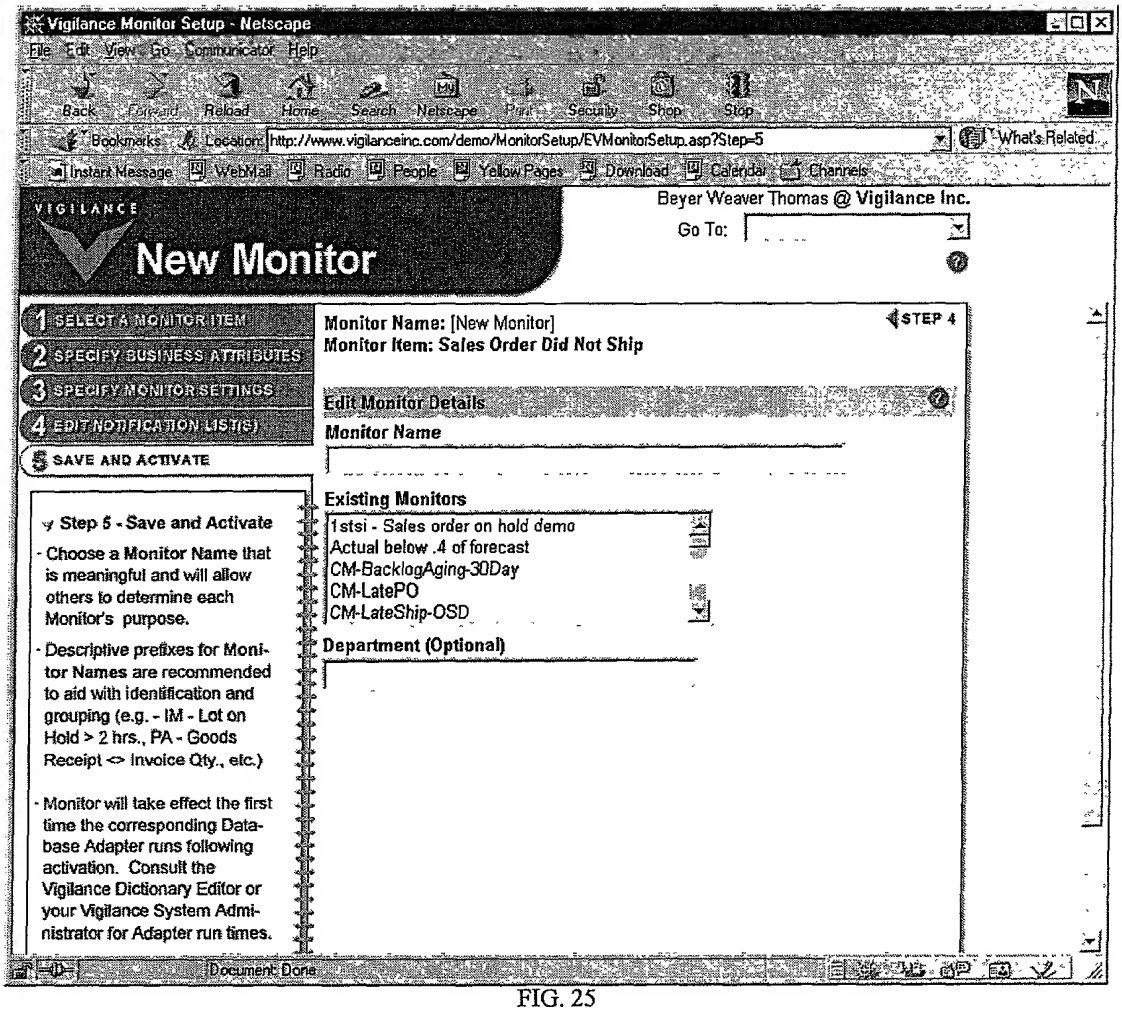

Vigilance Monitor Setup - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?Step=6
What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
Select Exception Properties For This Notification List
Priority:
High
Assign to:
Beyer Weaver Thomas
Name Notification List
Notification List Name
Existing Lists For This Monitor
[No Existing Notification List]
FINISH LIST
Document: Done

FIG. 24F


Vigilance Monitor Setup - Netscape
File Edit View Go Communicator Help
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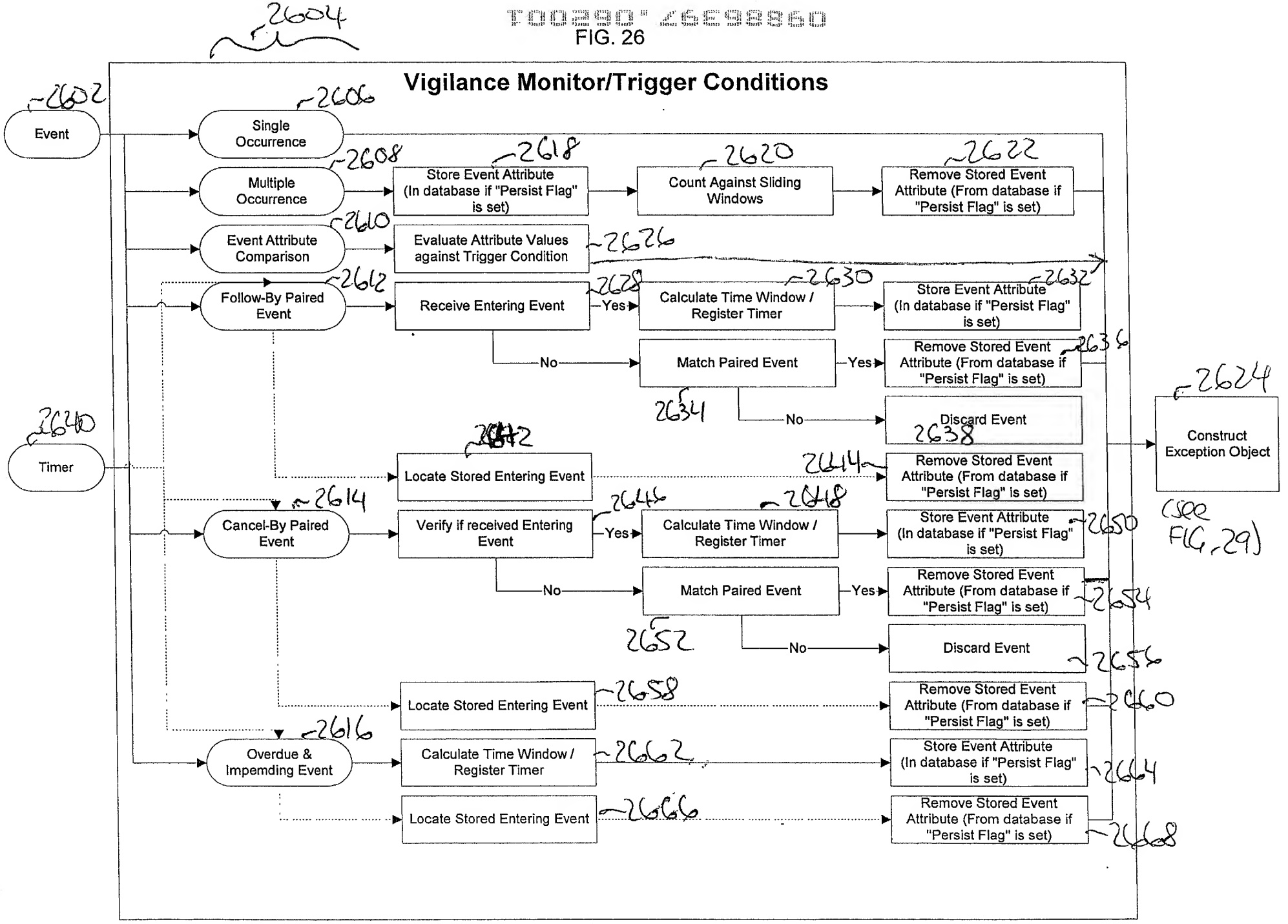
Bookmarks Location: http://www.vigilanceinc.com/demo/MonitorSetup/EVMonitorSetup.asp?Step=5
What's Related
Instant Message WebMail Radio People Yellow Pages Download Calendar Channels
VIGILANCE
New Monitor
Beyer Weaver Thomas @ Vigilance Inc.
Go To:
1 SELECT A MONITOR ITEM
2 SPECIFY BUSINESS ATTRIBUTES
3 SPECIFY MONITOR SETTINGS
4 EDIT NOTIFICATION LIST(S)
5 SAVE AND ACTIVATE
Step 5 - Save and Activate
- Choose a Monitor Name that is meaningful and will allow others to determine each Monitor's purpose.
- Descriptive prefixes for Monitor Names are recommended to aid with identification and grouping (e.g. - IM - Lot on Hold > 2 hrs., PA - Goods Receipt <> Invoice Qty., etc.)
- Monitor will take effect the first time the corresponding Database Adapter runs following activation. Consult the Vigilance Dictionary Editor or your Vigilance System Administrator for Adapter run times.
Monitor Name: [New Monitor]
STEP 4
Monitor Item: Sales Order Did Not Ship
Edit Monitor Details
Monitor Name
Existing Monitors
1stsi - Sales order on hold demo
Actual below .4 of forecast
CM-BacklogAging-30Day
CM-LatePO
CM-LateShip-OSD
Department (Optional)
Document: Done

FIG. 25

TOP SECRET//SCI

FIG. 26



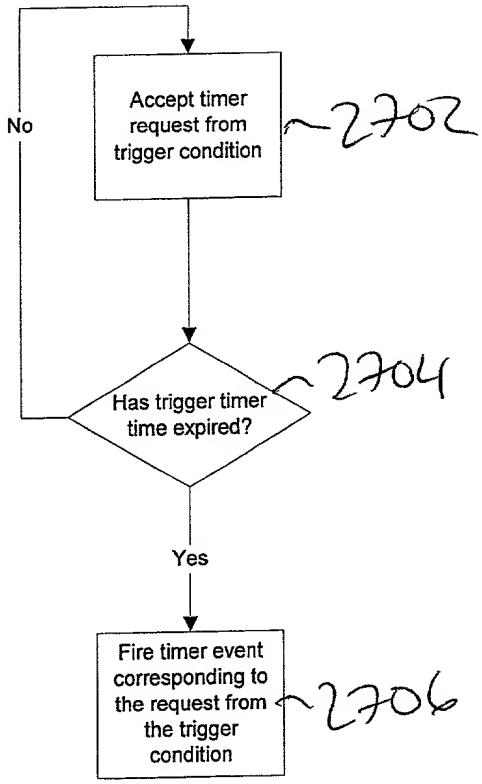

Accept timer request from trigger condition
2702
No
Has trigger timer time expired?
2704
Yes
Fire timer event corresponding to the request from the trigger condition
2706

FIG. 27

Monitor object

Monitor Name 2802
Monitor Author 2804
Condition 2806
One or more attributes 2808 (e.g., including one or more values)
Notification 2810
Assignment 2812

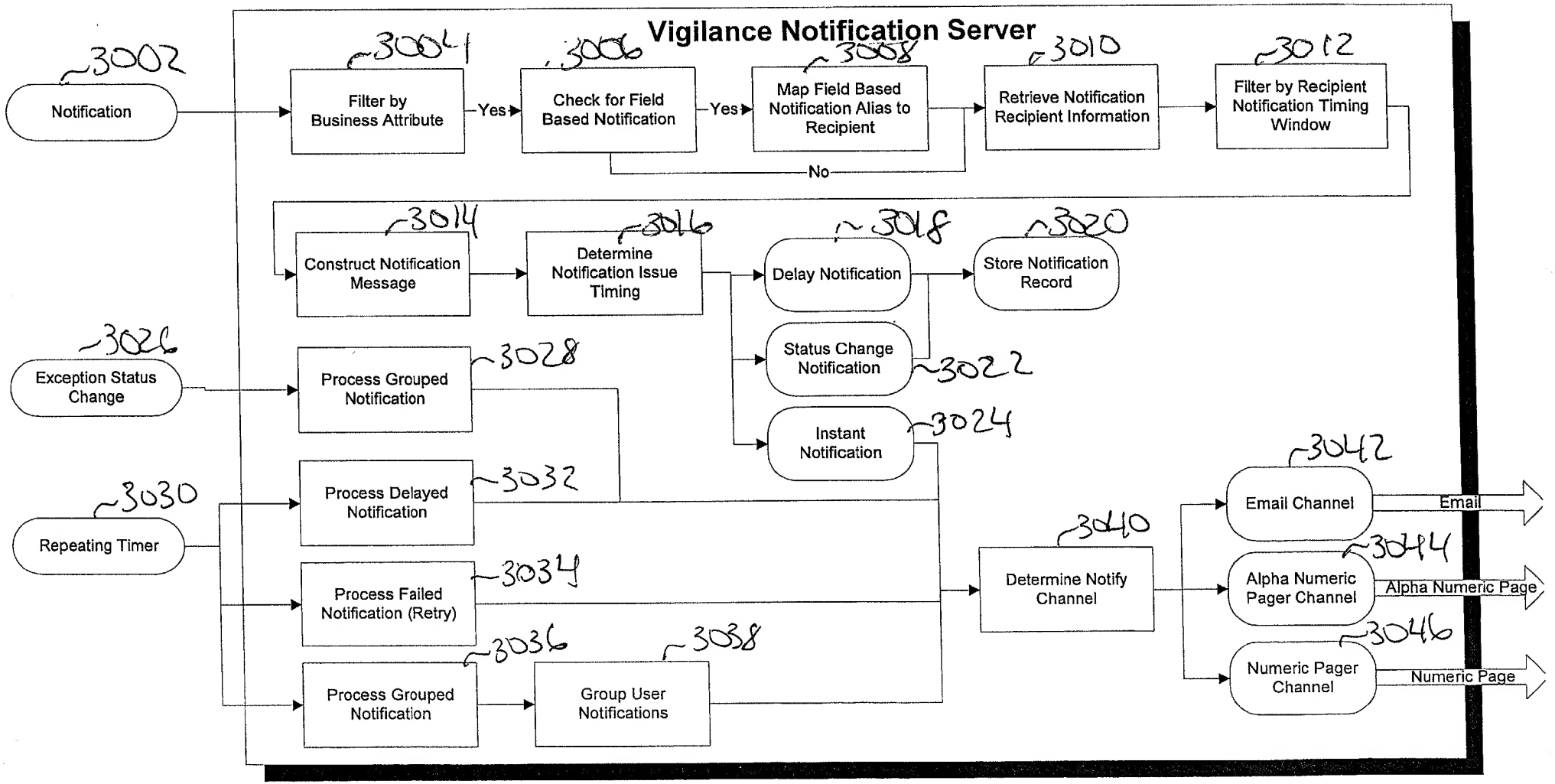
FIG. 28

Exception object

Exception identifier 2902	Exception description 2904	Event identifier 2906
Trigger condition 2908	Trigger type 2910	One or more attributes (e.g., business metrics) 2912
One or more attribute values 2914	Monitor name 2916	Monitor item 2918
Notification/exception 2920	Assign to 2922	Priority 2924
Detection time 2926	Analysis 2928	Analysis author 2930

FIG. 29

FIG. 30


Vigilance Notification Server
3002
Notification
3004
Filter by Business Attribute
Yes
3006
Check for Field Based Notification
Yes
3008
Map Field Based Notification Alias to Recipient
No
3010
Retrieve Notification Recipient Information
3012
Filter by Recipient Notification Timing Window
3014
Construct Notification Message
3016
Determine Notification Issue Timing
3018
Delay Notification
3020
Store Notification Record
3022
Status Change Notification
3024
Instant Notification
3026
Exception Status Change
3028
Process Grouped Notification
3030
Repeating Timer
3032
Process Delayed Notification
3034
Process Failed Notification (Retry)
3036
Process Grouped Notification
3038
Group User Notifications
3040
Determine Notify Channel
3042
Email Channel
Email
3044
Alpha Numeric Pager Channel
Alpha Numeric Page
3046
Numeric Pager Channel
Numeric Page

SCANNED,# 0

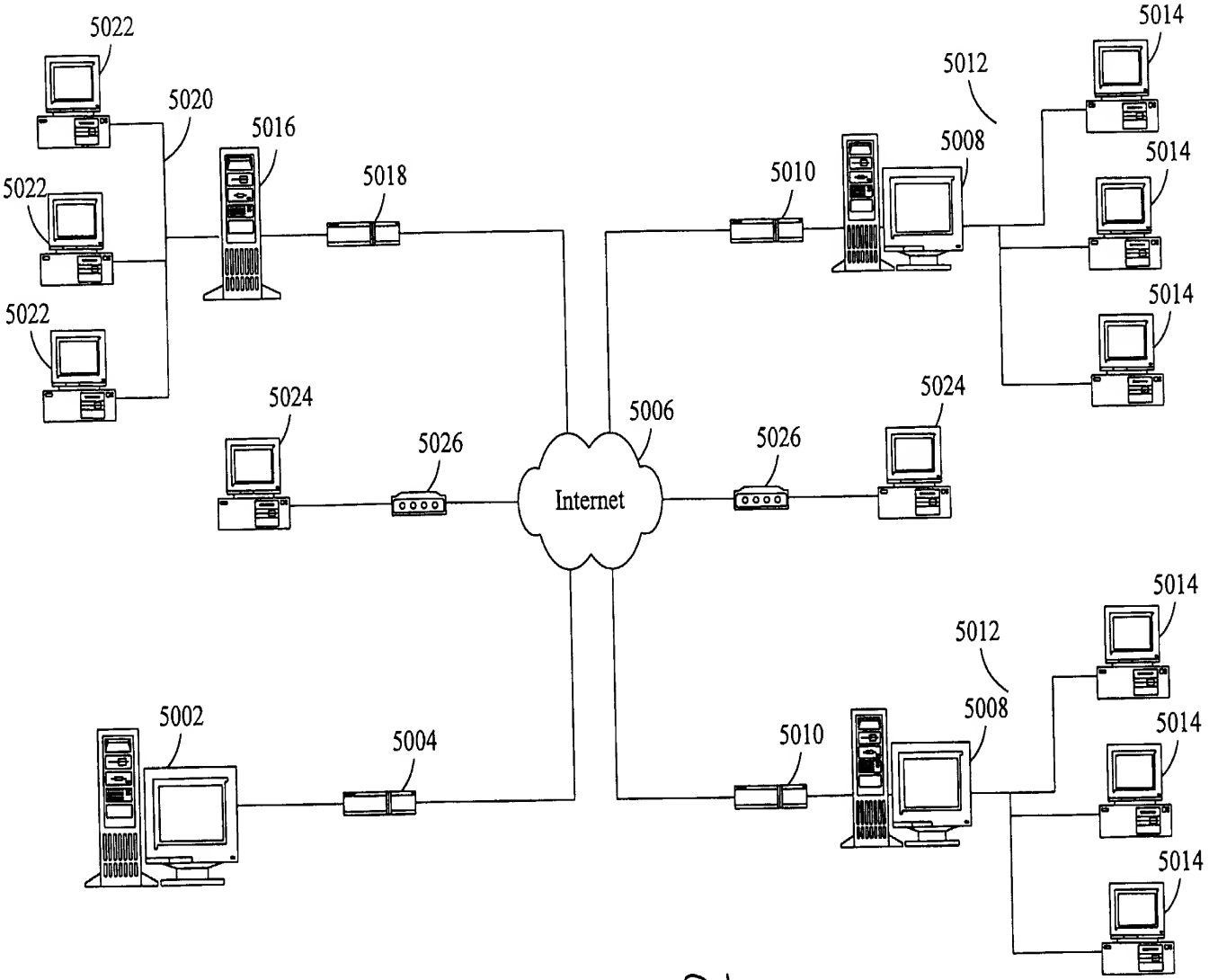


FIG. 31